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10/020,051	12/14/2001	Shinichi Fujii	15162/04200	4486

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EXAMINER	
TRAN, NHAN T	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 07/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,051	FUJII ET AL.	
	Examiner	Art Unit	
	Nhan T. Tran	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,22-32 and 37-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,22-32 and 37-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/27/2006 with respect to claims 10-16 & 37-44 have been considered but are moot in view of the new ground of rejection.

2. Applicant's arguments filed 4/27/2006 with respect to claims 1-9 & 22-32 have been fully considered but they are not persuasive.

Regarding independent claims 1, 8 & 9, the Applicants assert that neither Ishii nor Ohta discloses or suggests using a first evaluation value based on edges and then using a second evaluation value based on contrast to determine the in-focus condition (remarks, pages 12, 13, 15).

In response, the Examiner respectfully disagrees. As disclosed by Ishii in Figs. 10-11, col. 2, lines 45-64, col. 7, lines 45-55 and col. 10, lines 30-60, it is clear that the camera uses a first evaluation value based on edges and then uses a second evaluation value based on detected contrast to determine the in-focus condition. Although the second evaluation value based on contrast is calculated only when a large amount of defocus is detected, the teaching of Ishii still meets the present claim limitations since the claims do not exclude such a condition of focusing state. Thus, at least in view of the above, the combined teachings of Ishii and Ohta still meet the limitations of claims 1-9, 22-32.

With respect to Applicant's arguments for claim 23, the Examiner submits the same analysis above with addition that Fiete is not relied upon for the teaching of using

a first evaluation value based on edges and a second evaluation value based on contrast. Fiete is relied upon for the feature of noise component including edges having an edge width of one pixel which is removed to further improve focusing operation (see previous office action or below).

Claim Objections

3. Claim 1 is objected to because of the recitation of "the said image" in line 6 of claim 1. This should be corrected as --said image--.

Claims 30-32 are objected to because of the recitation of "each have an edge width" which should be corrected as --each has an edge width--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 8, the limitation "said evaluation value" in lines 9-10 of this claim cannot be determined since there are two different evaluation values (e.g., a first evaluation value and a second evaluation value). Thus, claim 8 renders indefinite.

Regarding claim 9, similar to claim 8, "said evaluation value" in lines 11-12 of this claim cannot be determined since there are two different evaluation values (e.g., a first evaluation value and a second evaluation value). Thus, claim 9 also renders indefinite.

The following art rejection applied to claims 8 & 9 is based on best understood in view of 35 U.S.C. 112, second paragraph above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-9, 22, 24-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al (US 5,225,940) in view of Ohta et al (US 6,493,027 B2).

Regarding claim 1, Ishii discloses an apparatus controlling an optical system (taking lens 1) at the time of capturing images as digital data (Fig. 1; col. 4, lines 14-38) comprising:

an instructing part (i.e., user interface) for instructing preparation for image capturing (col. 12, lines 42-47);

a calculator (combined circuits 5-11 shown Figs. 1 & 2) for detecting edges in an image in response to an instruction from said instructing part and calculating a first evaluation value indicative of the degree of achieving focus from said edges (col. 2,

lines 45-53; col. 4, lines 25-39 and col. 9, lines 1-29) and for detecting contrast of said image (by additional circuit shown in Fig. 9) and obtaining a second evaluation value indicative of achieving focus from said contrast (see Figs. 5, 10 & 11; col. 2, lines 54-64; col. 7, lines 45-55; col. 8, lines 33-60 and col. 10, lines 30-60);

a controller (micro-computer 8) for driving said optical system while changing a driving speed on the basis of said first evaluation value (see col. 2, lines 45-53 and Fig. 11, step #63 in which the driving speed is changed by reducing speed) and for determining an in-focus condition on the basis of said second evaluation value (see Fig. 11 and col. 10, lines 30-60, wherein contrast evaluation value is used to determine in-focus condition when a large amount of defocus exists).

Ishii does not explicitly disclose that the captured digital image is a *still image*. As taught by Ohta, a digital video camera is capable to capture both moving images and still images (see abstract; col. 2, lines 24-33). According to Ohta, when the camera is switched to digital still mode (SV mode) from a moving mode (MV mode), autofocus control is executed in response to half-pushed trigger button (see Ohta; Fig. 15, steps S44 and S47; col. 8, lines 51-62 and col. 11, lines 12-15). Such an implementation is to smoothly switch from moving mode to still mode while maintaining autofocusing function at an optimum state (see col. 2, lines 3-33).

Therefore, it would have been obvious to one of ordinary skill in the art modify the camera apparatus in Ishii to incorporate the teaching of Ohta to enable a still image mode for capturing still images in addition to the video mode while maintaining auto-

focusing function at an optimum state, thereby improving camera functionality with user convenience for capturing different type of images in a single camera.

Regarding claim 2, Ishii discloses that the evaluation value is obtained on the basis of a histogram of widths of said edges (see Ishii, Fig. 2, col. 2, lines 45-53 and col. 4, lines 25-38).

Regarding claim 3, it is clear in Ishii that the evaluation value includes a statistical value (i.e., mean value) obtained from said histogram (see Ishii, col. 9, lines 4-11).

Regarding claim 4, Ishii also discloses the evaluation value including an edge width corresponding to a center of gravity of said histogram (see Ishii, col. 5, lines 2-8, wherein a center of gravity of the histogram is represented by an average value y obtained from the histogram).

Regarding claim 5, Ishii further discloses that the evaluation value includes the number of said edges (see Figs. 1 & 2 and steps #55 & #59 in Fig. 11 and col. 4, lines 25-38).

Regarding claim 6, it is also clear in Ishii that the controller compares said evaluation value with a threshold value and changes said driving speed in accordance

with a comparison result (see steps #17 & #21 in Fig. 10 and steps #61 & #63 in Fig. 11).

Regarding claim 7, Ishii further discloses that said controller compares said evaluation value with a threshold value and, after said optical system is driven in accordance with a comparison result (step #63), said evaluation value is calculated again (via loop back at step #65 when previous mode = large amount of defocus).

Regarding claim 8, this method claim is also met by the analysis of apparatus claim 1.

Regarding claim 9, see the analysis of claim 1. Furthermore, Ishii discloses that the auto-focusing control flowchart shown in Figs. 10-12 is implemented by a program (see col. 9, lines 52-53) which is inherent stored in the camera in order for the apparatus to function as disclosed.

Regarding claim 22, Ishii also discloses a noise eliminating part (16, 17 & 8) for eliminating noise components derived from noises from said edges (see col. 5, lines 39-50).

Regarding claim 24, it is clear in Ishii that the evaluation value is calculated on the basis of a histogram of widths of the edges from which the noise components have been eliminated (see col. 5, lines 1-13, 44-50 and col. 6, lines 3-68).

Regarding claim 25, it is also clear that the evaluation value includes a statistical value (i.e., mean value) obtained from said histogram (see col. 9, lines 4-11).

Regarding claim 26, Ishii discloses said noise component is eliminated by extracting a region where an edge width falls within a predetermined range from the histogram which has not been subjected to noise component elimination yet (see col. 5, lines 44-50).

Regarding claim 27, Ishii also discloses the evaluation value including an edge width corresponding to a center of gravity of said histogram already subjected to noise component elimination (see Ishii, col. 5, lines 2-8, wherein a center of gravity of the histogram is represented by an average value y obtained from the histogram).

Regarding claims 28 & 29, see the analyses of claims 8, 9 & 22.

Regarding claim 30, further disclosed by Ishii is that the edges from which the calculator calculates the first evaluation value each has an edge width which is equal to

or larger than a predetermined value (threshold value TH2; Fig. 11; see col. 4, lines 25-38 and col. 9, lines 21-37).

Regarding claims 31 & 32, see the analyses of claims 8, 9 & 30.

6. Claims 10-13, 15, 37-39 & 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US 5,212,516) in view of Ohta et al. (US 6,493,027 B2).

Regarding claim 10, Yamada discloses an apparatus for controlling an optical system at the time of capturing images, comprising:

an instructing part (combined logic control circuit 8 and inherent user interface) for instructing preparation for image capturing (Figs. 4 & 8; col. 6, lines 23-26);

a first calculator (combined circuits 7 & 8) for detecting edges in an image and calculating a first evaluation value (an edge width evaluation value) indicative of the degree of achieving focus from said edges; a second calculator (combined circuits 5, 6 & 8) for calculating contrast of said image and obtaining a second evaluation value (a contrast evaluation value) indicative of the degree of achieving focus from said contrast (col. 6, line 49 – col. 7, line 11);

a controller (8) for driving said optical system on the basis of said first and second evaluation values in response to an instruction of said preparation for image capturing, wherein, irrespective of a focusing condition of said optical system, said

controller determines a driving direction of said optical system by using said second evaluation value and calculates a driving amount (driving speed) of said optical system by using said first evaluation value (see col. 6, line 61 – col. 7, line 11 and col. 18, line 65 – col. 19, line 24).

Yamada does not disclose that the captured image is a digital still image. As taught by Ohta, a digital still video camera is capable to capture both moving images and still images in digital format (by virtue of A/D converter 3152; see abstract; col. 2, lines 24-33). According to Ohta, when the camera is switched to digital still mode (SV mode) from a moving mode (MV mode), autofocus control is executed in response to half-pushed trigger button (see Ohta; Fig. 15, steps S44 and S47; col. 8, lines 51-62 and col. 11, lines 12-15). Such an implementation is to smoothly switch from moving mode to still mode while maintaining autofocusing function at an optimum state (see col. 2, lines 3-33).

Therefore, it would have been obvious to one of ordinary skill in the art modify the camera apparatus in Yamada to incorporate the teaching of Ohta to construct a digital still video camera which would be able to capture a still image in addition to video images while maintaining auto-focusing function at an optimum state, thereby improving camera functionality with user convenience for capturing different type of images in digital format by a single camera.

Regarding claim 11, also disclosed by Yamada is that said controller calculates said second evaluation value in first arrangement (i.e., areas q and r; Figs. 5(a)-(c), 6

and 9(a)-(b)) and second arrangement (i.e., area p; Figs. 5(a)-(c), 6 & 9(a)-(b)) of said optical system to determine said driving direction such that a degree of achieving focus increases along said driving direction between said first and second arrangement of said optical system (see col. 8, lines 15-19).

Regarding claim 12, Yamada further discloses that the controller determines the driving amount between said first and second arrangements on the basis of first evaluation value in said first arrangement (see col. 8, lines 19-31, 40-55).

Regarding claim 13, it is clear in Yamada that the first evaluation value is calculated on the basis of widths of said edges (see col. 6, line 49 – col. 7, line 11 and col. 8, lines 15-31).

Regarding claim 15, this method claim is met by the analysis of claim 10.

Regarding claim 37, see the analysis of claim 10. Furthermore, Yamada discloses that the driving amount is changed according to characteristics of said optical system (i.e., aperture size and focal length), and wherein said driving amount is increased when the f-number (aperture size and/or focal length) of the optical system becomes larger (see Yamada, col. 8, line 32 – col. 9, line 45).

Regarding claims 38 & 39, it is clear that the characteristics of said optical system include a focal length and aperture value as analyzed in claim 37.

Regarding claim 43, this method claim is also met by the analysis of apparatus claim 37.

7. Claims 14, 16, 40-42 & 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US 5,212,516) in view of Ohta et al. (US 6,493,027 B2) and in further view of Ishii et al. (US 5,225,940).

Regarding claim 14, Yamada and Ohta do not teach that the first evaluation value includes an edge width corresponding to a center of gravity of a histogram of widths of said edges. Ishii teaches an evaluation value including an edge width corresponding to a center of gravity of a histogram of widths of edges so that the adverse effects of noises can be removed (see Ishii, col. 5, lines 1-13, wherein the center of gravity of the histogram is represented by an average value y obtained from the histogram).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the combined apparatus of Yamada and Ohta to include the teaching of Ishii to calculate the first evaluation value which would include an edge width corresponding to a center of gravity of a histogram of edge widths so as to enable noise removal to improve focus accuracy.

Regarding claim 16, the combined teachings of Yamada and Ohta disclose all limitations of claim 16 (see claim 10) except for disclosing a program being stored in a recoding medium which is executed by a controller to perform the focusing steps. However, Ishii teaches an auto-focusing program which is inherently stored in a camera apparatus to enable focus operations of the camera (see Ishii, col. 9, lines 52-53).

Therefore, it would have been obvious to one of ordinary skill in the art to configure the combined camera of Yamada and Ohta using a software program stored in a recording medium of the camera to perform focusing operations so that the camera would have more upgrading flexibility over hardware configuration.

Regarding claims 40 & 41, Yamada and Ohta do not teach the evaluation value obtained on the basis of the histogram of widths of said edges, wherein said evaluation value includes a statistical value obtained from said histogram. As taught by Ishii, an evaluation value is obtained on the basis of histogram of edges (col. 4, lines 25-39 and col. 6, lines 3-10). Ishii further teaches that the evaluation value includes a statistical value (mean value) obtained from the histogram (see col. 6, lines 11-21 and col. 9, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art to combine teachings of Yamada and Ohta with Ishii to arrive at the Applicant's claimed invention of using histogram of edge widths and statistical value so as to provide an in-focus detection apparatus using a video signal which achieves high in-focus accuracy

and allows focusing to an actual object without slight movement of a focus lens as taught by Ishii in col. 2, lines 19-24.

Regarding claim 42, see the analysis of claim 14.

Regarding claim 44, see the analyses of claims 37 & 16.

8. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. and Ohta et al. as applied to claim 22 and in further view of Fiete et al (US 6,023,056).

Regarding claim 23, Although Ishii teaches a noise eliminator for eliminating noises from the edges, Ishii and Ohta do not explicitly teach that the noise component includes edges having an edge width of one pixel. However, Fiete teaches that noises having an edge width of one pixel (44; Fig. 8) are removed from a plot so that the best focus of the imaging system is determined (see Fiete, col. 4, lines 63-67 and col. 5, lines 12-17).

Therefore, it would have been obvious to one of ordinary skill in the art to further configure the combined apparatus of Ishii and Ohta to detect and finely eliminate noise component including edges each having an edge width of one pixel so that the best focus would be achieve.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Thursday, 7:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NT.

DAVID OMETZ
SUPERVISORY PATENT EXAMINER